Management Plan Viking-Age Ring Fortresses

as a World Heritage Site

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A Danish nomination to UNESCO's World Heritage List

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Danish Agency for Culture and Palaces
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MUSEUM SYDØSTDANMARK

Fyrkat Viking-Age Ring Fortress. One of the crossings of the ditch.
Photo: Morten Rasmussen, Danish Agency for Culture and Palaces.

Content

Property Brief Description

2.1 Summary property description

Viking-Age Ring Fortresses comprises a unique and strategically positioned group of five archaeological sites which constitute royal fortresses of the emerging Danish kingdom in the last decades of the tenth century.

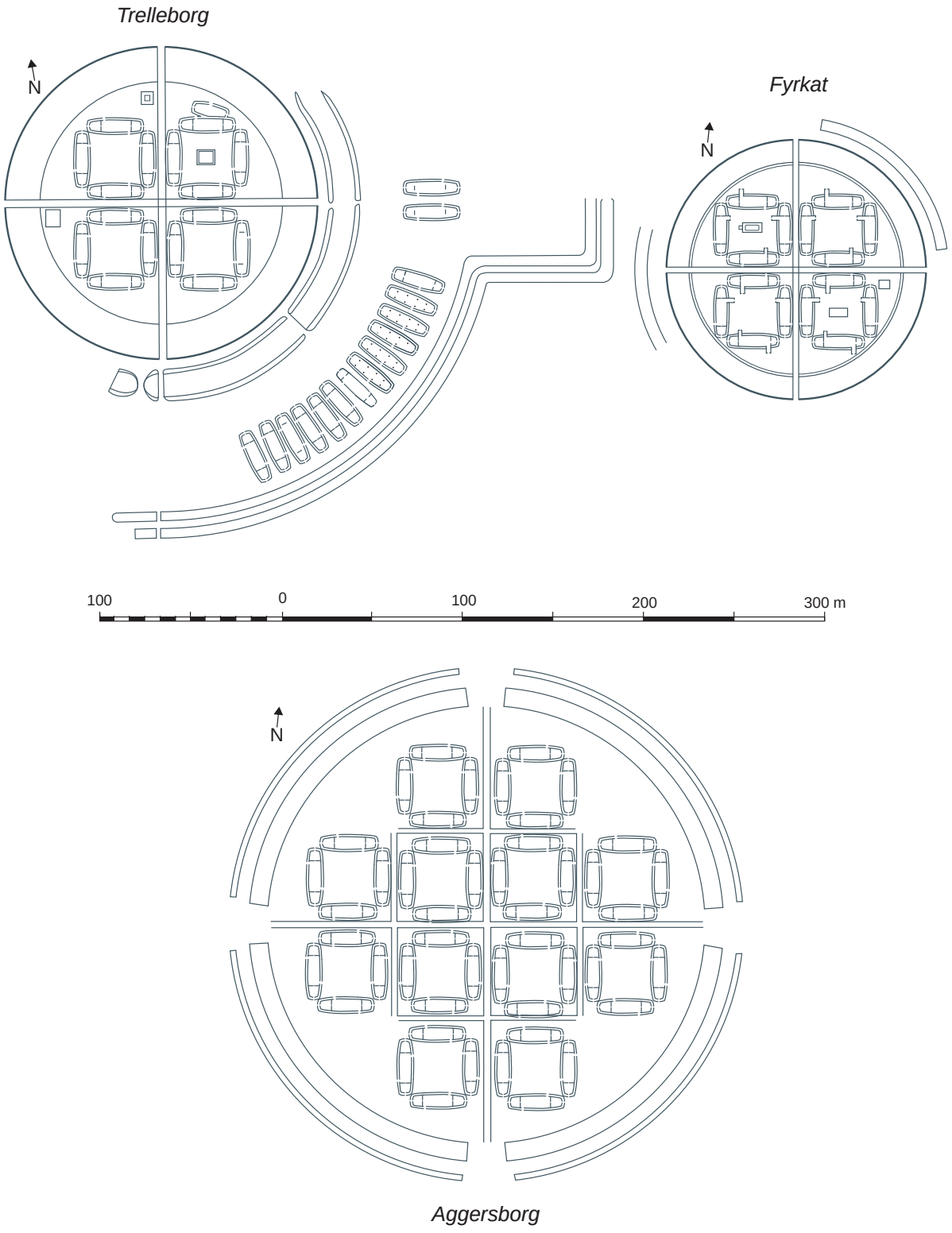
Component parts (individual fortresses) of the series are distributed across the Jutland peninsula and the islands Funen and Zealand: *Aggersborg* (the most northerly) and *Fyrkat* (around 50 km southeast of *Aggersborg*), both in the Northern Jutland peninsula; *Nonnebakken* on Funen; and *Trelleborg* and *Borgring* on Zealand (west and east, respectively).

Location and size

Each individual site is delimited to all sides by the extent of the known or presumably preserved archaeological material or features, including distinctive features of the natural topography that formed an integral part of the defensive structure of individual fortresses (for example river segments, marshland and steep banks). Buffer zones are designated around each component part.

Viking-Age Ring Fortresses were built as a contemporary system of permanent defensive enclosures. The five archaeological sites are intimately linked as a group and share:

- common and precise geometric design that evidences modular and scalable planning that is clearly displayed at each fortress;
- strategic spatial positioning as a chain of fortresses across the Viking-Age kingdom of Denmark, the first and only Viking-Age network of fortresses in Scandinavia;
- geography of fortresses linked to proximity of important communication and trade routes, including waterways (national and international) and cardinal land-routes;



Diagrammatic comparisons of *Viking-Age Ring Fortresses* as recorded by archaeological excavation in three of the sites.

Drawing: Lars F. Thomasen in Roesdahl, Roesdahl, E., Sindbæk, S.M. and Pedersen, A. (Eds.) 2014. Aggersborg i vikingetiden. Jysk Arkæologisk Selskabs Skrifter 81. Aarhus.

- similar specific locations in the landscape - at slightly elevated, relatively protected and reasonably defensible places with prominent visibility;
- incorporation of the natural topography (e.g. promontories and peninsulas, steep slopes, rivers, marsh/bog) and its modification into defensive capabilities;
- large-scale engineering characteristics, not only of the fortress itself (colossal earthworks for ramparts) but also in ground-levelling/filling preliminaries;
- sudden appearance in the landscape through a short period of construction (around 970-80 CE) under one ruler (King Harald "Bluetooth" Gormsson, ruled c. 959 -c. 987 CE);
- unique fortress interior (*Aggersborg*, *Fyrkat* and *Trelleborg*; and probably *Nonnebakken*) filled with geometrically-ordered and demonstrably-replicated wooden longhouses, with no "main building";
- short period of use, mostly abandoned within a generation (some possibly in only 10-15 years), and no traces of maintenance;
- imprecise, but strongly inferential, function of this landmark architectural intervention in tenth-century Scandinavia (the Viking-Age was characterised by an oral tradition).

Aggersborg: Aerial view east to Aggersund Bridge which crosses the narrow strait of the Limfjord.
Photo: Lis Helles Olesen, 2007.

2.2 Summary description of each component part of the series

1. *Aggersborg Viking-Age Ring Fortress*

Description

Aggersborg in north Jutland is the northernmost of the *Viking-Age Ring Fortresses*. Situated on the north side of the Limfjord, around 2 km west of the narrowing of the Limfjord at Aggersund, the fortress utilises a southerly-sloping predominantly open agricultural terrain and commands exceptional views over expansive open water. The fortress is highly-visible in the landscape, flanked to the east by low-lying fields, present-day Aggersborg village, and wetlands that border the shore of the fjord, and to the west by low-lying fields that lead to extensive wind-blown sand dunes and rows of sub-parallel wave-formed sand islands and spits that jut into the expanse of Løgstør Bredning wetland Ramsar site. To the immediate north is a 12th/13th-century church and walled cemetery, while in the south is a 15th/18th century farmstead and manor house called Aggersborggård. Part of the farm is located over the southernmost extent of the fortress, overbuilt on a segment of rampart and ditch. Beyond the farm is a patchwork of fields on both sides of the track that leads to the causeway that crosses the shallows of the strait to the small island of Borreholm. A royal fortified estate was found in 2009 in the garden of Aggersborggård and on the beach. This underlines the importance of Aggersborg island as a control point of the traffic on the Limfjord and the north-south transport route.

Aggersborg is in a grassed-over status and has not yet been fully excavated. The internal diameter of the circular rampart is estimated as c. 240 m, 9 m wide with a c. 8 m wide berm between the rampart and a 4.5 m-wide/1.5 m-deep concentric V-shaped ditch. An outwork extended across the berm from

the front of each of the four gateways. The rampart was re-marked in the terrain by the Danish Forest and Nature Agency in 1992 and the gateways re-marked and the ditch re-defined by excavation under close supervision of the National Museum of Denmark.

Within the rampart, the structure was divided into four main quadrants by two wood-paved axial streets. Each quadrant is further divided by short transverse streets into three smaller blocks of buildings arranged around rectangular courtyards. In each quadrant there were 12 longhouses, arranged in three blocks. In total 48 buildings were arranged to form 12 blocks, each of four longhouses. The buildings have curved longitudinal walls and measure c. 32 m in length and have a maximum width at the middle of c. 8 m. They were divided internally into three rooms, with a 19.5 m long hall in the middle, often with a central hearth. At each end of the longhouse there was a smaller gable room. The longhouses are of the same type as seen in the blocks at *Trelleborg*, *Fyrkat* and probably also *Nonnebakken*. Wall construction is not clear, but there are indications that double earth-set wall posts were used - the same as at *Fyrkat* and *Trelleborg*. However, the filling of the wall may have been wattle and daub instead of wooden planks. The buildings had sloping external bracers, i.e. buttress support posts.

1. *Aggersborg*: Boundaries and buffer zone

The nominated property of the component part Aggersborg is centred on the fortress. The boundary extends north to the boundary of the medieval Christian church and cemetery in its walled enclosure, and south to include the southernmost segment of the fortress which was incorporated into the manor farm "Aggersborggard" at least by the 18th century. In the east the boundary is the western edge of the road that passes the fortress and leads to a T-junction at the present-day Aggersborg village, where it is extended west, parallel with a field and ownership boundary. In the west, the boundary is the field boundary which marks the extent of ownership of the Danish Nature Agency and, where this meets the ownership of "Aggersborggård" in the south, it is continued along the same line to meet the shoreline. The deep sailing channel of the Limfjord remains on the southern side of the fjord, whereas the northern side has shifting sands with a causeway across the shallows that links "Aggersborggård" with the small island of Borreholm. The extent and pattern of water was likely different in the Viking-Age so this immediate area is not included as nominated property but protected instead as setting in an inner "special control zone" of the buffer zone (existing Natura 2000 provides compatible protection for the specific cultural purposes in this instance).

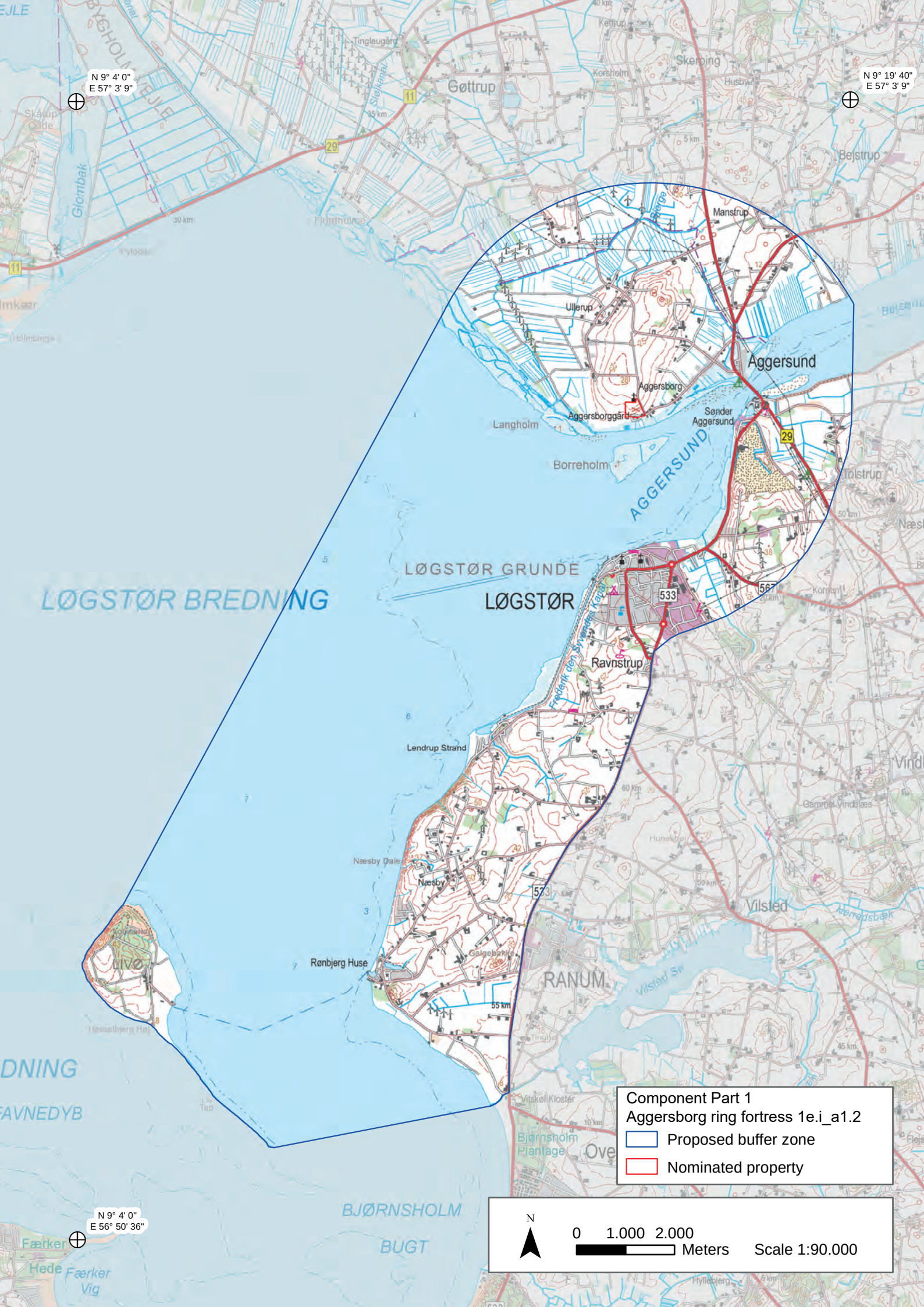
Aggersborg. Peder Dam, Odense City Museums. Background Map: Kort25.


N 9° 13' 17"
E 57° 0' 51"
N 9° 16' 45"
E 57° 0' 51"
N 9° 13' 17"
E 56° 57' 56"
Ullerup
Trehøje
Thorup
Borredige
Over Aggersund
Aggersund
Aggersborgrimme
Neder Aggersu
Søndergård
Præstebakke
Søndersletten
Aggersborg
Aggersborg
Aggersborggård
Langholm
Digløre
Holm
Borreholm
AGGERSUND
Øster
Havn
Vester
Havn
LØGSTØR
Simonsens Anlæg
Component Part 1
Aggersborg ring fortress 1e.i_a1.1
Special control zone
Nominated property
N
0
500
1.000
Meters
Scale 1:20.000

General panoramas and key views

In the Viking-Age the strategic location of the fortress provided uninterrupted views out over the water routes (south, east and west) with a limited view over rising terrain to the north; much as it does today. Aggersborg's position suggests that, in addition to the strategic land route, the fortress must have been directed towards one of Denmark's most important navigation routes – the link for seagoing traffic between Western Denmark, Western Europe and the North Atlantic on the one side and Eastern Denmark and the Baltic region on the other. The best panorama over the fortress is gained from the observation point near the car park and this key view extends beyond to the Limfjord.

Aggersborg. Peder Dam, Odense City Museums. Background Map: Kort100.


N 9° 4' 0"
E 57° 3' 9"
N 9° 19' 40"
E 57° 3' 9"
N 9° 4' 0"
E 56° 50' 36"
Gøttrup
Skørping
Bejstrup
Manstrup
Ullerup
Aggersund
Aggersborg
Aggersborggård
Sønder Aggersund
Langholm
Borreholm
AGGERSUND
LØGSTØR GRUNDE
LØGSTØR BREDNING
LØGSTØR
Ravnstrup
Lendrup Strand
Næsby Dale
Næsby
Rønbjerg Huse
RANUM
Vilsted
BJØRNSHOLM BUGT
Bjørnsholm Plantage
Vitskøl Kloster
Færker
Hede Færker Vig
Component Part 1
Aggersborg ring fortress 1e.i_a1.2
Proposed buffer zone
Nominated property
N
0 1.000 2.000
Meters
Scale 1:90.000

Fyrkat: aerial view west over the fortress to the wide valley of the river Onsild Å.
Photo: Morten Rasmussen, Danish Agency for Culture and Palaces, 2016.

2. *Fyrkat Viking-Age Ring Fortress*

Description

Fyrkat is located on a promontory overlooking the wide glaciated valley of the river Onsild Å, with lakes and extensive areas of wetland bordered by open agricultural fields rising to woodland. The fortress is close to both Hærvejen (the historic main road north-south through the Jutland Peninsula) and Mariager Fjord with access to the Kattegat. In the Viking-Age, *Fyrkat* was constructed at the head of Mariager Fjord, at the point where the fjord meets the river Onsild å, and only c. 10 km from rivers on which you can sail to the Limfjord. Fyrkat then controlled both N-S and E-W axis. Here, the fortress stood well-protected on its scarp-sided promontory with open water to the north-east and bordered by the Onsild Å immediately to the north and west along with boggy meadows, including in the south. The water by the fortress was probably between 0.5 and 1 m deep. Today the area has been re-established as a wetland area – boggy inaccessible terrain – recapturing the Viking tactical inclusion of natural defensive barriers. Prior to the construction of the fortress, some ground-levelling to the south had been undertaken. The main access to the ring fortress has been through the western and northern gateways. *Fyrkat* is in a grassed-over status. Post-holes filled with concrete mark the cruciform axial streets, the ring-street and the longhouses/yards/yard-houses in each of the three excavated courtyards/quadrants. The fortress comprises a precisely-circular 12 m-wide rampart with an inner diameter of 120 m. The outer face was formed by a wooden palisade. At c. 10 m from the rampart is a V-shaped ditch, 7.5 m wide and 2 m deep. At the four cardinal points of the compass the rampart was interrupted by gateways which were

covered by a wooden construction. Two wood-paved main axial streets link the gateways, crossing each other at the centre of the fortress, thereby dividing the structure into quadrants. In addition to these main axes there was a wood-paved road running around the inner side of the rampart.

In the enclosure/inner ward there were 16 longhouses arranged to form four blocks (courtyards); one block in each quadrant. Each block comprised four identical wooden longhouses arranged as wings around a quadratic yard. Only three of the four blocks have been excavated. The length of the houses at *Fyrkat* was c. 28.5 m and their width 7.3 m in the middle and c. 5 m at the straight gables.

A cemetery is located northeast of the fortress and around 30 inhumation graves of men, women and children have been excavated (GPR data suggests that there are more graves).

Dendrochronological dates around 975 CE demonstrate that the fortress was in use, at the latest, at the same time as *Trelleborg*.

2. *Fyrkat*: Boundaries and buffer zone

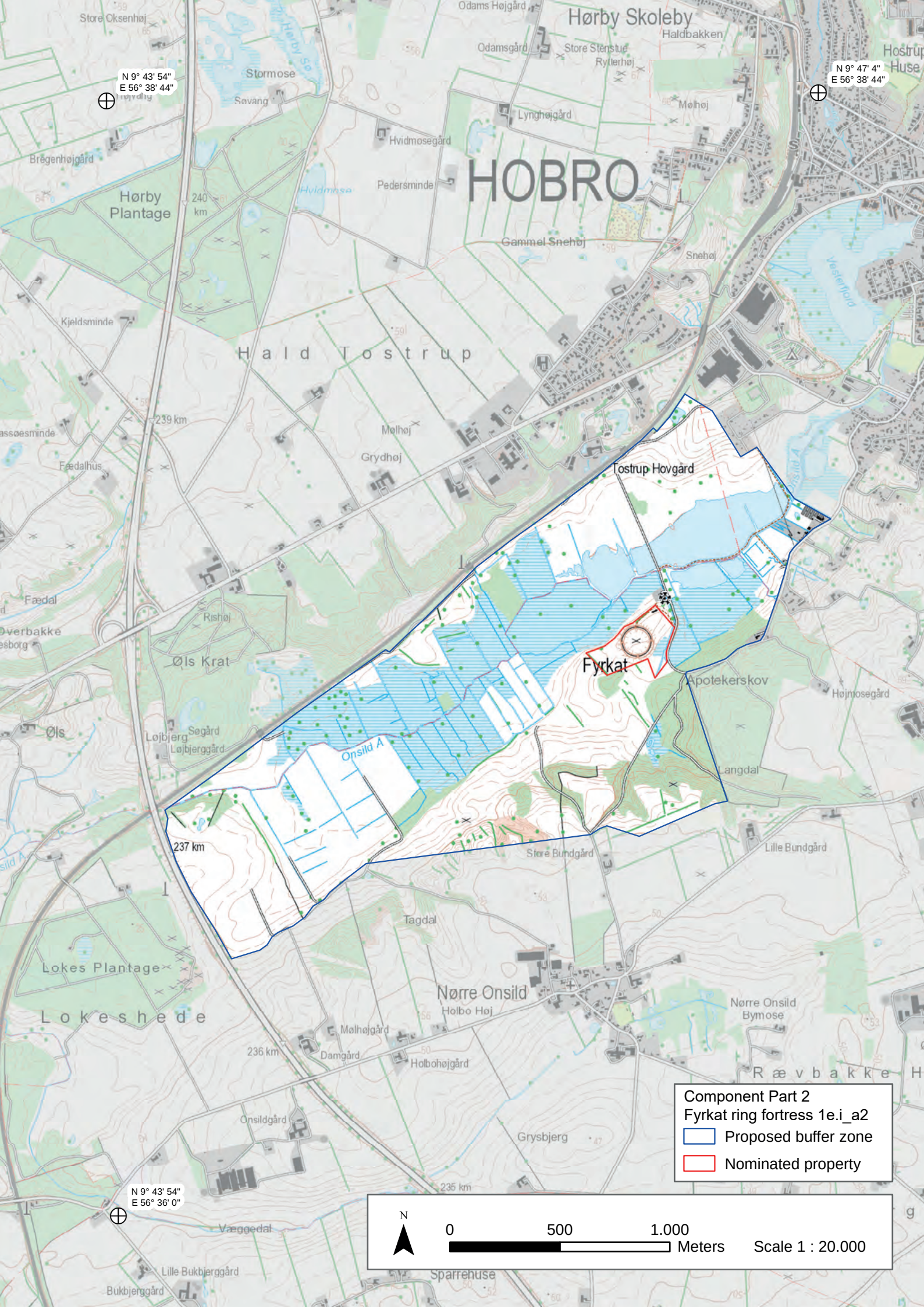
The nominated property of the component part *Fyrkat* is centred on the fortress located in the middle of the distinctive ENE-WSW-oriented plateau, including the cemetery immediately outside the fortress to the northeast. The boundary follows the ownership boundary of the National Museum of Denmark.

A buffer zone surrounds the nominated property and is guided by the northeast-southwest trending river valley for around 3.6 km. North of the nominated property the buffer zone extends for around 500 m, with around 300 m to the south.

General panoramas and key views

In the Viking-Age the strategic location of the fortress on the promontory provided uninterrupted views out over the water routes in the valley (north, east and west); much as it does today. Due to its situation on high ground, panoramas over the fortress are best gained from the ramparts themselves, a key view extending from the northern rampart into the river valley.

Fyrkat. Peder Dam, Odense City Museums. Background Map: Kort25.


HOBRO
Hørby Skoleby
Hørby Plantage
Hald Tostrup
Lokeshede
Lokes Plantage
Nørre Onsild
Tostrup Hovgård
Fyrkat
Onsild Å
Ølst Krat
Ølst
Løjbjerg
Løjbjerggård
Søgård
Fædal
Fædalhus
Overbakke
Rishøj
Grydhøj
Mølhøj
Gammel Snehøj
Snehøj
Pedersminde
Hvidmosegård
Lynghøjgård
Odamsgård
Odams Højgård
Store Stenstue
Rytterhøj
Haldbakken
Hostrup Huse
Møllehøj
Stormose
Søvang
Bregenhøjgård
Store Oksenhøj
Kjeldsminde
Apotekerskov
Højmosegård
Langdal
Store Bundgård
Lille Bundgård
Tagdal
Holbo Høj
Mølhøjgård
Damgård
Holbohøjgård
Nørre Onsild Bymose
Rævbakke
Onsildgård
Grysbjerg
Væggedal
Lille Bukbjerggård
Bukbjerggård
Sparrehuse
Yesterfloid
240 km
239 km
237 km
236 km
235 km
N 9° 43' 54"
E 56° 38' 44"
N 9° 47' 4"
E 56° 38' 44"
N 9° 43' 54"
E 56° 36' 0"
Component Part 2
Fyrkat ring fortress 1e.i_a2
Proposed buffer zone
Nominated property
N
0
500
1.000
Meters
Scale 1 : 20.000

Nonnebakken: visible as an elevated area in the modern city.
Graphics: Mads Runge. Background Map: Danish Geodata Agency.

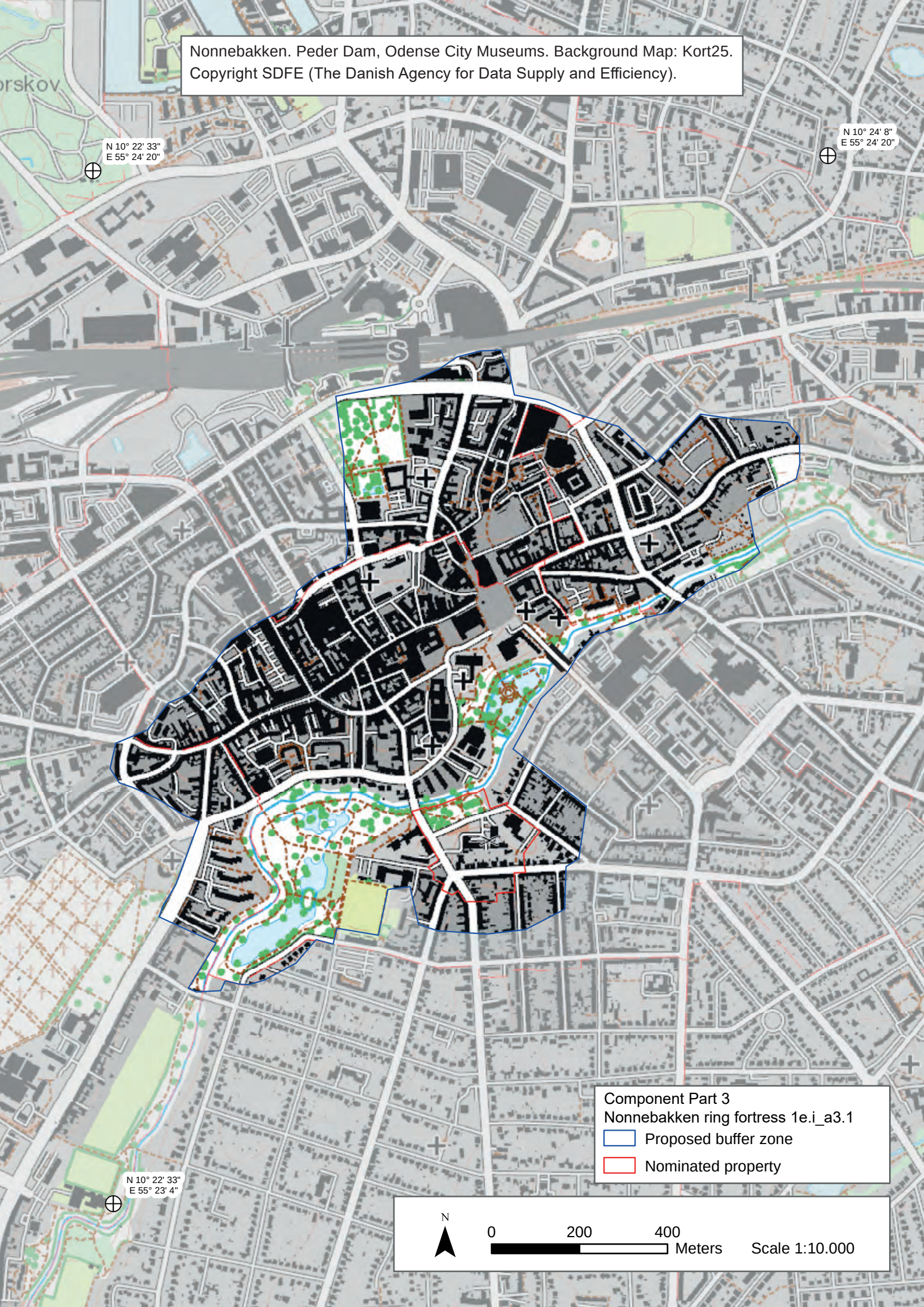
3. *Nonnebakken Viking-Age Ring Fortress*

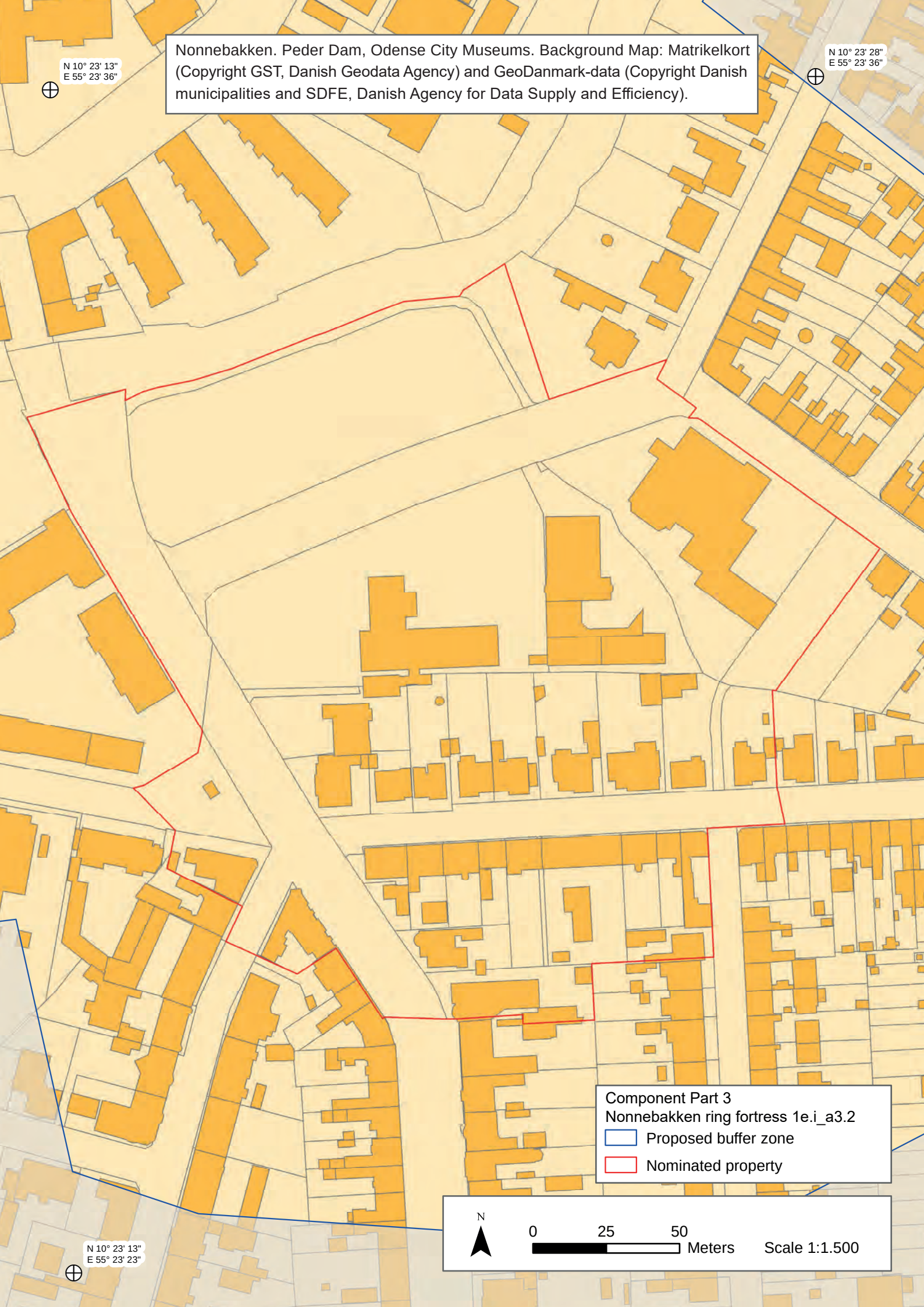
Description

Nonnebakken was built on a clay-rich promontory, adjacent to the river Odense Å and around 400m south of the proto-urban Viking-Age settlement of Odense. To the north, west and east the fortress was surrounded by the looped course of the river Odense Å and wetlands bordering it; a topography that corresponds with other ring fortresses. To the south, a semi-circle with a radius of 1 km was without other contemporary finds, indicating a cleared landscape. Prior to the construction of the fortress some ground-levelling had been undertaken, involving the addition of soil, and a layer of clay for the foundation of the rampart. Today it lies in the central area of the modern city of Odense, with the meandering river and a number of ponds set in open areas of green parkland. The city is dominant in the setting of the fortress, however, and this even extends to the property itself which has been built on with several structures during its history.

The fortress was placed at the easiest and presumably original passage of the river Odense Å, at the present-day course of the roads Klaregade-Hunderupvej. At the northern side of the river another promontory extends to the water, on which some of the oldest urban-like structures of Odense (pit-houses and permanent houses) have been excavated. The distance from *Nonnebakken* to the sea is about 6 km as the crow flies but the meandric course of the river Odense Å means that the sailing distance is about double.

Archaeological excavations at *Nonnebakken* revealed a circular rampart with an inner diameter of c. 120 m, together with an outer concentric ditch. The rampart is c. 14.5 m wide and


Nonnebakken. Peder Dam, Odense City Museums. Background Map: Kort25.
Copyright SDFE (The Danish Agency for Data Supply and Efficiency).
N 10° 22' 33"
E 55° 24' 20"
N 10° 24' 8"
E 55° 24' 20"
N 10° 22' 33"
E 55° 23' 4"
Component Part 3
Nonnebakken ring fortress 1e.i_a3.1
Proposed buffer zone
Nominated property
N
0
200
400
Meters
Scale 1:10.000


Nonnebakken. Peder Dam, Odense City Museums. Background Map: Matrikelkort (Copyright GST, Danish Geodata Agency) and GeoDanmark-data (Copyright Danish municipalities and SDFE, Danish Agency for Data Supply and Efficiency).
N 10° 23' 13"
E 55° 23' 36"
N 10° 23' 28"
E 55° 23' 36"
N 10° 23' 13"
E 55° 23' 23"
Component Part 3
Nonnebakken ring fortress 1e.i_a3.2
Proposed buffer zone
Nominated property
N
0
25
50
Meters
Scale 1:1.500

was built from earth-and-turf with a wooden façade on both its inner and outer face. In an excavation in 2015, a ditch c. 30 cm-wide and 50 cm-deep was recorded with large closely-spaced posts marking a vertical inner wall. To support this wall, a row of obliquely-set smaller posts, with a diameter of c. 5-10 cm, had been placed on its inner side. Outside the rampart there was a flat c. 8.5 m broad section, the so-called berm, followed by a ditch with a v-shaped cross-section, a minimum width of 9 m and a maximum depth of 4 m.

Historical maps and drawings of *Nonnebakken*, together with geophysical site surveys, indicate that the ring fortress has four gateways rotated slightly to the west in relation to the principal points of the compass. Moreover, the geophysical survey and several excavations revealed a large number of postholes and made the existence of the large building blocks very/more than plausible. The ring-street along the inner side of the rampart has been encountered several times and was c. 1.6m wide corresponding roughly to that at *Fyrkat*. The entire rampart is now evidenced around the fortress and, in the SW area, is very well preserved up to about 1.5-1.7m in height and in the NW around 1m in height.

3. *Nonnebakken*: Boundaries and buffer zone

The nominated property of the component part *Nonnebakken* is centred on the archaeological site of the fortress, distinguished from its surroundings by a marked elevation and sloping rampart, especially visible in the northwest. It is located in a developed urban context with buildings (including a school) and hard-surfaced areas covering much of the site. The property boundary extends to the external edge of the circular ditch (a buried structure) and the low-lying area towards the North, the possible location of the so-called "Odins Vi" and the direct connection to the river Odense Å.

Important setting is included within a buffer zone which surrounds the nominated property. This extends 500 m to the west to include the river valley, 300 m to the north to include the river valley and associated sites in the known contemporary area of Odense, and around 170 m to the south and 200 m to the east over an area of predominantly residential housing.

General panoramas and key views

In the Viking-Age the strategic location of the fortress provided a view over the river valley to the north and the proto-city beyond; a situation easily conjured today. Key views to understand the fortress are gained mostly from the north and northwest where the rampart is visible in the topography.

Nonnebakken: depicted on the panorama of Odense published by Braun & Hogenberg 1593.


Septentrio
Ecclesia Broby
Eccl. Allese
Porta Occidentalis exterior
VIA OCCI
Porta Oc. int.
muro extr.
DEN TALIS
Pratorium Flackhaffi ferum
Agropolium
Schola Trivialis
D. Clara Coen.
Coenobium D. Canuti
Mollen Thor
Merr dies

Trelleborg: aerial view south across meandering rivers.

4. *Trelleborg Viking-Age Ring Fortress*

Description

Trelleborg lies a little over 3 km east of the Great Belt, in a cultivated, flat coastal landscape virtually lacking in woodland. It stands on a promontory where the large watercourses Tude Å and Vårby Å meet and encircle the site. Consequently, the fortress occupies a good strategic position with expansive views and is protected on all sides by, respectively, the two rivers and the outer ward which runs between them. The outer ward has a separate rampart and ditch and protects the fortress from land in the east (and southeast) where there is access to the promontory. In the Viking-Age, the landscape was characterised by extensive wetland areas with bogs, meadows and commons, and the rivers may have been larger and deeper than they are now. The ring fortress now constitutes part of a rehabilitated natural area around the rivers Tude Å and Vårby Å.

Trelleborg consists of a main fortress and an outer ward. The main fortress itself was fortified with a circular rampart with an internal diameter of 136 m and a width of 18 m. This was clad with an oak palisade both internally and externally, the sides being bound together with transverse timbers. The front of the palisade reached almost 8 m in height and, filled with turf, stones and clay, the wooden constructions have survived for more than a thousand years. Towards dry land, the rampart was further fortified with a V-shaped ditch segment c. 18 m wide and c. 4 m deep in the east and south (today to be seen to almost join the two rivers). Towards the outer edge of the promontory, excavations in 2008 documented the presence of an additional ditch which similarly followed the course of the

rampart (but it did not have the same dimensions as the ditch towards dry land). In this ditch a wooden shield was found.

There are four gateways in the circular rampart, one at each principal point of the compass. The gateways were reinforced with boulders and took the form of covered tunnels which were sealed outermost by a gate. Charred planks have been found in all four gateways showing that they had been exposed to fire.

The inside of the main fortress was divided into quadrants by two wood-paved axial streets. These ran between the gateways and met at right angles at the centre, thereby forming the main axes within the fortress. In each of the quadrants, a block comprising four identical longhouses (Trelleborg-type) was built around an enclosed yard.

Outside the rampart of the main fortress is a ward/bailey, formerly containing 15 longhouses and a cemetery which was probably in use from the time of the construction of the fortress (135 inhumation graves contained the remains of 157 individuals). The ward was similarly protected by an outer rampart with a gateway.

4. *Trelleborg*: Boundaries and buffer zone

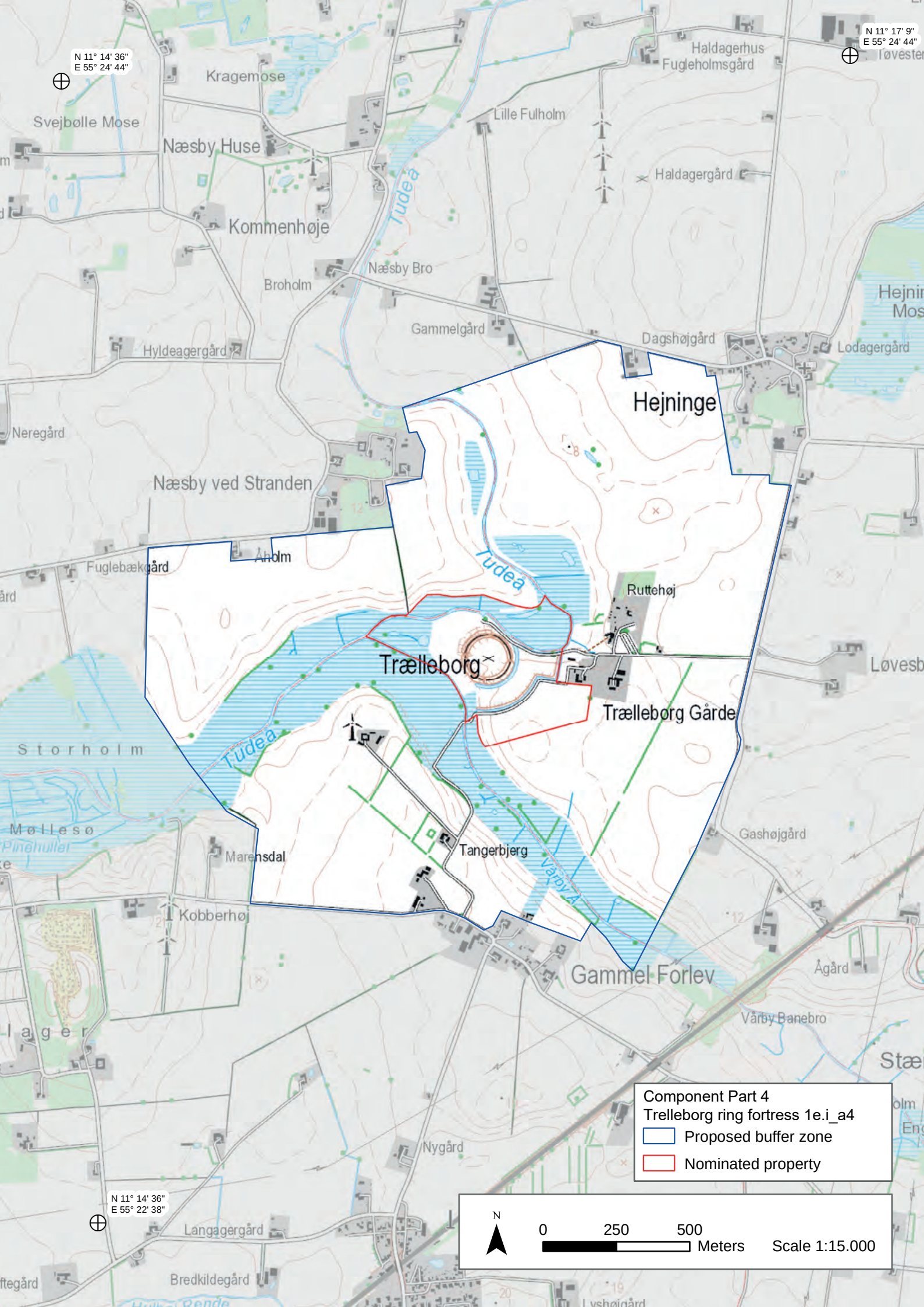
The nominated property of the component part *Trelleborg* is centred on the fortress, located on a promontory between two rivers (Tude Å and Vårby Å). The boundary includes the additional quadrant in the southeast where a bailey and an arc of longhouses was sited (protected by a separate rampart and ditch) and beyond to the east, where the known cemetery with mass graves is located, and to the southeast and south where further graves are thought probable. To the north, the boundary follows the river (Tude Å), in the southwest the river (Varby Å), while in the west it includes a newly-found fortress ditch.

The buffer zone surrounds the nominated property and extends for around 600 m across the valley to the south, 600 m along the valley to the west, 630 m across the visitor centre and farmland to the east, and around 670 m across rising fields in the north.

General panoramas and key views

In the Viking-Age the strategic location of the fortress on the promontory/peninsula provided uninterrupted views out over the rivers (north, west and south) and the land approach; much as it does today. The best panorama over the fortress is gained from the area in front of the visitor centre. Panoramas may also be obtained from the ramparts, both across the fortress and to and beyond the river valleys.

Trelleborg: Peder Dam, Odense City Museums. Background Map: Kort25.


N 11° 14' 36"
E 55° 24' 44"
N 11° 17' 9"
E 55° 24' 44"
N 11° 14' 36"
E 55° 22' 38"
Kragemose
Svejbølle Mose
Næsby Huse
Kommenhøje
Haldagerhus
Fugleholmsgård
Lille Fulholm
Haldagergård
Tudeå
Næsby Bro
Broholm
Gammelgård
Dagshøjgård
Lodagergård
Hyldeagergård
Neregård
Næsby ved Stranden
Hejninge
Åholm
Fuglebækgård
Ruttehøj
Trælleborg
Trælleborg Gårde
Storholm
Møllesø
Pinehullet
Marensdal
Tangerbjerg
Vårby Å
Gashøjgård
Kobberhøj
Gammel Forlev
Ågård
Vårby Banebro
Nygård
Langagergård
Bredkildegård
Component Part 4
Trelleborg ring fortress 1e.i_a4
Proposed buffer zone
Nominated property
N
0
250
500
Meters
Scale 1:15.000

Borgring: aerial view of the fortress and past the highway in an easterly direction that follows the shallow valley of the Køge River to the city of Køge and Køge Bay (less than 5 km distant). The expansive open water of the Bay is part of The Sound between Denmark and present-day Sweden; a strategic strait in the Viking-Age where territory on both sides was ruled by Bluetooth.
Photo: Steen Knarberg, Museum Southeast Denmark, 2019.

5. *Borgring Viking-Age Ring Fortress*

Description

Borgring is located in a rural landscape adjacent to the northern bank of the Køge River Valley, less than 1 km northeast of the village of Lellinge, part of the municipality of Køge in the eastern part of Zealand. To the east of the site, an esker stretches from the ring fortress to the wash land of the Køge Bay, some 3 km away. To the west the esker continues more than 15 km along the north side of the Køge River Valley. The fortress itself stands on a sloping terrain where the esker was already eroded away by the end of the last Ice Age. Here the terrain offered an opportunity to cross the river valley (more than 500 m wide) by foot, horse or cart: a few hundred metres west of *Borgring*, an archaeological excavation has revealed an ancient hollow-way leading to a ford.

A survey performed by the Danish National Museum and Geoscience at Aarhus University has mapped the historical landscape around Borgring. The mapping concludes that it was not possible to navigate from the Køge Bay to Borgring on the Køge River in the Viking-Age. Instead land-based traffic has been in focus. In this respect, the ring fortress has been protected by natural topographical conditions: the river valley to the south, a brook with steep sides to the west, and an area to the north and east has water locked depressions. This also explains the absence of a ditch in association to the rampart. The main access to the ring fortress has been through the northern gateway.

The fortress is characterised by a circular rampart with an inner diameter of c. 123 m. The rampart is divided into quarters by four gateways rotated approximately 17 degrees to the east,

in relation to the principal points of the compass. The rampart is constructed of turf-and-earth and has been clad with planks on the front. Protruding into the river valley the southern part of the rampart and the south gate were built on the top of a 1 m-thick layer of clay, which was laid out on the soggy terrain before construction began. The best-preserved part of the turf- and rampart is just over 1m-high.

Three of the four investigated gateways seem to have been destroyed by fire (possibly started from within the gateways). This was established in a rare and innovative collaboration with the National Forensic Services of the National Danish Police. Two samples from charred logs in the northern gateway have been radiocarbon dated. One sample of elm had a calibrated calendar age between 895–1017 CE, and the other sample of oak had a calibrated calendar age between 893–1012 CE. There are no signs of an attack on the gates or the rampart. The overall results of the excavations bear witness to a ring fortress that, if finished at all, was only used either briefly or perhaps just for symbolic purposes.

5. *Borgring*: Boundaries and buffer zones

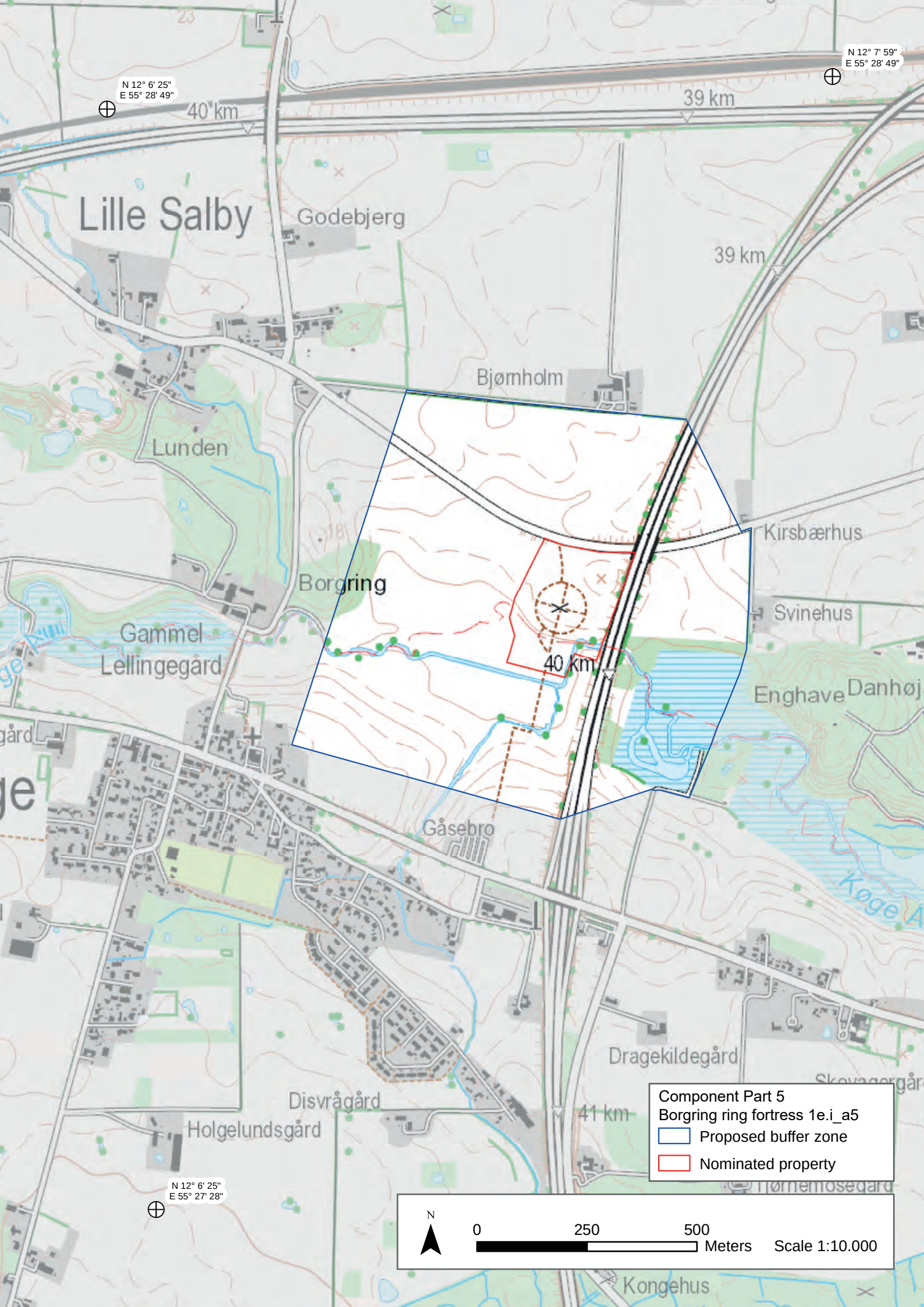
The nominated property of the component part *Borgring* is centred on the fortress. In the east it is bounded by the modern embankment of the north-south dual-carriageway road that crosses the east-west river valley. In the north the boundary extends to the east-west Lille Salby road, in the west to the boundary of the scheduled area, and in the south to meet the river.

Other immediate setting is contained within the buffer zone which surrounds the nominated property and extends around 300 m across wetland and into rising farmland to the south, around 350-400 m across farmland to woodland in the west, 300 m north of the road that forms the northern boundary of the nominated property, and 250 m to the east of the north-south highway embankment.

General panoramas and key views

In the Viking-Age the strategic location of the fortress provided a clear view out over the river valley (south) with lateral views (east and west) over the sloping terrain of the northern valley side; much as it does today. The best panorama over the fortress is gained from the observation point near the car park.

Borgring. Peder Dam, Odense City Museums. Background Map: Kort25.


N 12° 6' 25"
E 55° 28' 49"
N 12° 7' 59"
E 55° 28' 49"
40 km
39 km
39 km
Lille Salby
Godebjerg
Bjørnholm
Lunden
Kirsbærhus
Borgring
Svinehus
Gammel
Lellingegård
40 km
Enghave
Danhøj
Gåsebro
Køge Å
Dragekildegård
Disvrågård
41 km
Holgelundsgård
N 12° 6' 25"
E 55° 27' 28"
Component Part 5
Borgring ring fortress 1e.i_a5
Proposed buffer zone
Nominated property
N
0
250
500
Meters
Scale 1:10.000
Kongehus

Trelleborg Viking-Age Ring Fortress. View west to The Great Belt.
Copyright: Slagelse Municipality

3 Outstanding Universal Value

3.1 Statement of Outstanding Universal Value (OUV)

Viking-Age Ring Fortresses is a coherent group of fortified defensive enclosures that was constructed in 975-980 CE across the Jutland peninsula and the islands Funen and Zealand. Each stronghold of the strategically planned system was not far from open water and was positioned near important land and sea routes. Moreover, all conform to a distinctive architectonic masterplan based on precise geometrical and symmetrical form, an assertion of functional and symbolic expression of state power across clearly demarcated territory.

The fortresses (*Aggersborg*, *Fyrkat*, *Nonnebakken*, *Trelleborg* and *Borgring*) created a monumental character in the landscape (some still do), their uniform geometric construction reflecting a highly-developed technical expertise and organisational manifestation. They range in diameter from 120 metres to 240 metres (standardised measurements based on the Roman foot) and merge different traditions of defensive and residential architecture into a new and distinctive type of enclosure. In most cases, fortified circular earthen ramparts clad with timber, supplemented by a full or partial concentric ditch, protected an internal arrangement of wooden axial-streets in the form of an equilateral cross in a circle. Where present, the ring-street provided access to the palisaded ramparts while the axial-streets led to gates located close to the four cardinal directions. In three of the earliest-excavated fortresses, ranks of geometrically-arranged longhouses with curved walls and straight gables were laid out in the four prescribed quadrants with a precision never attained elsewhere. Moreover, at Nonnebakken, recent archaeological investigation provides a high degree of certainty that these features were also present (i.e. the fortress was "fully built").

Together the fortresses form the largest monuments left from the Viking-Age, the most impressive materialisation of a new type of centralised governance in late tenth-century southern Scandinavia. Their coordinated construction under King Harald "Bluetooth" Gormsson (r. 958-987 CE), as part of his wider infrastructure works (e.g. the Danevirke reinforcements and the Ravning Enge Bridge), plays an important role in the unification of the Danish realm and the official religious and societal transformation from pagan tribal Scandinavian culture into a unified Christian state society. Spread across what is now Denmark, northern Germany, southern Sweden and Norway, this heralded the formation of the Nordic States and the ultimate transition of the Viking-Age into the Scandinavian Middle Ages.

The property is justified on the basis of two UNESCO criteria (iii) and (iv):

Criterion (iii): bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;

Viking-Age Ring Fortresses bears exceptional testimony to a cultural tradition that is located in South Scandinavia, the Viking homelands, a meeting ground of extensive cultural, social and political networks which stretched across vast territories. The system of fortresses is a functional and symbolic expression of the new concept of state power in late tenth-century southern Scandinavia, its landform-scale circular ramparts further signi-

Drawing: Sune Elskær.

fying nobility, kingship and authority; and, together with the axial- and ring-streets, perhaps a symbolic expression of a new, Christian, cultural identity.

As one of the great building projects of King Harald Bluetooth, it represents a key period of transition in Northern Europe, coinciding with the transformation of pagan tribal Nordic culture into a centralised and predominantly Christian state society, which also introduced literacy alongside oral tradition. This heralded the formation of the Nordic States, their ultimate integration with Continental Europe, and the consequent end of the Viking-Age along with its traditional and far-reaching culture and civilization.

Construction of the fortresses was a colossal task and could only have been resourced by a king. Drawing by Sune Elskær, Danish Agency for Culture and Palaces, 2014.

Criterion (iv): be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history.

Viking-Age Ring Fortresses is a group of outstanding monumental military building works without parallel or obvious precursors in Scandinavia; it is also exceptional as a system within the wider European Early Medieval context. The strategically positioned ensemble was constructed in 975-980 CE in a regular, strategic pattern across the Jutland peninsula and the is lands Funen and Zealand. The system stands out as notable Viking-Age building works and is testimony to a strong central power in the emerging Danish kingdom, an antecedent to the Nordic States and the end of the Viking-Age.

Characterised by a rich, well-founded and well-preserved archaeological record, precise symmetrical layout and a strategic position in the landscape, the ensemble makes a key contribution to the interpretation of the historic developments in Viking-Age Scandinavia and Northern Europe, including how early state formation was performed.

Intrinsic links demonstrate a unified system (cultural, social, functional) and shared characteristics, including: narrow date of construction and use under a single ruler; position in the landscape and proximity to cardinal communication and transport routes; succession to older religious or political centres; monumental appearance; precise geometrical and symmetrical layouts; circular shape enclosing a cross; and similarity in construction including massive resource-commanding features.

Variations provide essential archaeological and scientific data defining the attributes and characteristics of the Viking-Age Ring Fortress, including: specificity of location; size; location of gateways and presence of axial roads; extent and placement of buildings; cemeteries; and perhaps even a reflection on the development in the perception of the fortresses.

Aggersborg.
Photo: Morten Rasmussen,
Danish Agency for Culture and Palaces, 2017.

In addition, the following conditions of integrity and authenticity are a necessary qualification:

Statement of integrity

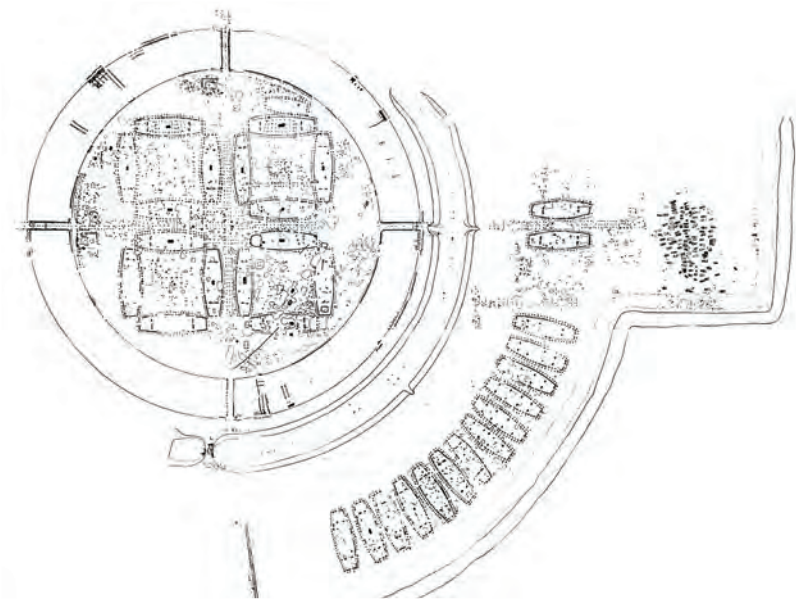
Viking-Age Ring Fortresses comprises a series of five archaeological sites that constitute a single property of great historical and scientific value. In terms of size and wholeness, the series as a coherent group contains the architectural and cultural attributes necessary to convey the significance of the fortress system as a whole.

The nominated property includes all elements necessary to express proposed outstanding universal value. The known level of preservation of the monuments and all associated archaeological remains, together with their overall state of conservation, is sufficiently high to demonstrate principal attributes. Individual contributions by each component part are clearly defined and, together, the series adequately satisfies compositional integrity.

The buffer zones are legal managerial entities that protect the nominated property and its integral geographical features in the immediate setting. They also protect visual integrity.

Overall, the nominated property has endured remarkably well for over one thousand years. The remote rural situation and specific topographical characteristics of four out of five

fortresses has meant that there has been little development at these sites. One component part is conversely situated in an urban context and has suffered from adverse effects of development but nonetheless contains buried archaeology with proven preserved values that are essential to the series. There are no future threats from development, or neglect.



Trelleborg: excavated areas.
Graphics: P. Nørlund, National Museum of Denmark, 1948.

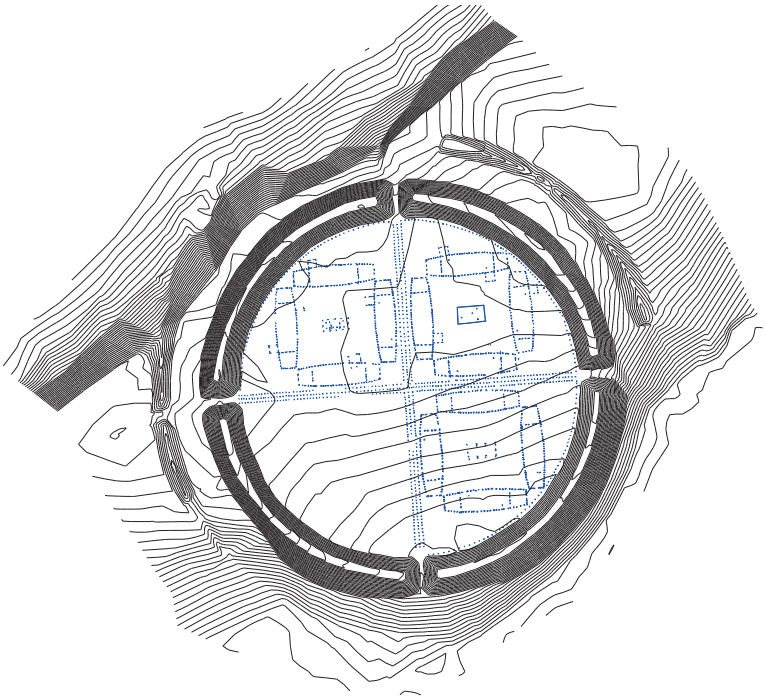
Statement of authenticity

Authenticity of the *Viking-Age Ring Fortresses* is high, backed by extensive documented evidence from archaeological investigations over many years. Four of the five fortresses are located in relatively remote rural areas and (other than partially at *Aggersborg*) have not been inhabited or otherwise built upon since they were abandoned, ensuring the authenticity of their archaeology and their location and setting. One thousand years of weathering, and to a certain extent farming, had eroded ramparts and earth has filled ditches, preserving their form. Following important archaeological work undertaken at three component parts (*Trelleborg*, *Fyrkat* and *Aggersborg*), ramparts were partially reconstructed to protect ground-level and buried archaeology – and to re-mark them in the terrain for interpretive purposes, enhancing value and increasing protection for each monument. Work also included excavating and redefining the defensive ditches in the landscape, together with the marking of other structures within or close to the fortresses.

All work was carried out on the basis of the comprehensive and detailed records produced by the excavations and did not impair the original substance.

At *Borgring* its very recent discovery means that a more sensitive and light-touch contemporary approach was adopted. The exception is *Nonnebakken*, located in the city of Odense, where urban activities have impacted on the visibility of the fortress. Recent excavations, however, proved that significant parts of the archaeology survive intact; roads, parking places and lawns have actually created a protective layer.

Large parts of the fortresses remain unexcavated and have high archaeological potential.



Fyrkat: Archaeological structures of the fortress and site contours emphasise the coordination between anthropogenic and natural topography.

Graphics: Jan Slot-Carlsen, Historical Museum of Northern Jutland.

3.2 Attributes table

Viking-Age Ring Fortresses: basis for comparison	
1	Systematic development of a planned and unified system of fortifications over a short period of time with innovative design and symbolism demonstrating royal power, ideological authority and prestige, (perhaps even Christianity) during the process of state formation in the late Viking-Age; occupied and used for only a short period
2	Strategically sited across state territory (in conjunction with fortified towns) and tactically located close to important land and sea routes (surveillance and/or military logistics) with strong regard to local landscape features
3	Distinctive, innovative and largely consistent plan for circular fortresses with shared characteristics of a unique scalable design that displays precise geometric and mathematical order and strict alignment of gateways and internal axial roads in the four cardinal directions, regardless of terrain, together with distinctive and uniform building typology and layout within the fortified enclosure

3.3 Summary contribution of each component part to OUV

1. *Aggersborg Viking-Age Ring Fortress*

This is the largest of the fortresses in every respect (twice the diameter of *Fyrkat*), and the most northerly situated (one of two fortresses in Jutland). It illustrates the successive use of a pre-existing important site and has an afterlife with a medieval church and a royal estate on the shoreline just south of the abandoned ring fortress. This long-term situation is an exemplar strategic siting to control a vital sea lane and nearby land route. The fortress is in an attractive marine coastal setting with high environmental quality, is substantially complete (apart from the southernmost portion of the rampart and ditch within the farm) and has significant archaeological potential.

2. *Fyrkat Viking-Age Ring Fortress*

This is one of the smaller fortresses (very close in size to *Nonnebakken* and *Borgring*), located on a Viking-Age land-route southeast of *Aggersborg*. It is strategically sited on a promontory which gives it a commanding view over the river valley and the appearance of a logical defensive site. It is largely complete in plan and is one of two fortresses which has a cemetery. The immediate setting is of compatible rural character and an adjacent centre provides interpretive activity. The site has yielded some important finds.

3. *Nonnebakken Viking-Age Ring Fortress*

This is one of the smaller fortresses (very close in size to *Fyrkat* and *Borgring*) and is the only one on Funen. It is strategically sited on a slight promontory which gave it a commanding view over the river valley to Odense. This is the only fortress developed in conjunction with a Viking-Age proto-city and the only place where the ambition of Harald Bluetooth on gathering the realm, including the formation of cities and bishop seats, has seen its full scale after the fortress has gone out of use. The urban character of the site, combined with a high level of associated interest in today's Odense makes it logical to present the site in conjunction with the city and its museums. The site has yielded some important finds.

4. *Trelleborg Viking-Age Ring Fortress*

The size of this fortress (136 m) is intermediate between *Aggersborg* on the one hand and *Fyrkat*, *Nonnebakken* and *Borgring* on the other hand and the most sophisticated with an outer ward and cemetery (one of the two fortresses with a cemetery). It is the 'type' fortress and gave name to the longhouse construction. It is located as one of two fortresses in Zealand and is strategically sited on a peninsular promontory which gave it a commanding view over the two river valleys, with a landward approach to the main entrance. The Trelleborg Shield was found here.

5. *Borgring Viking-Age Ring Fortress*

The size of this fortress is similar to the smaller fortresses of *Fyrkat* and *Nonnebakken*. This is the most recently discovered fortress and perhaps never finished. Another possibility is that it had a more symbolic meaning and therefor did not need to have all the inner structures that characterises the other fortresses. It is located as one of two fortresses in Zealand and is strategically sited on a valley side which overlooked the river valley.

Together, the series of fortresses embody the apogee of site selection, fortress design, construction and use of materials that is highly representative of Viking-Age, and Viking, tradition. Although each has an individual and varied contribution to OUV, it is as a group of fortresses that stand out in terms of high integrity, authenticity and readable topographic setting. Moreover, as a prestigious royal system, their spatial layout across the emergent Danish nation is crucial. Their design and construction are elevated to an outstanding level of consistently applied precision ordered geometry and symmetry, including the placement of prototype 'Trelleborg-type' longhouses in a settlement layout that is simply exceptional.